

in the TII mode, 0 in normal mode);  $g(t, l, k) = \exp(j*2*\pi*k*(t-T_g)/T_u)*\text{rect}(t/T_s)$  for all  $l$ ; and  $\text{rect}(x) = 1$  for  $0 \leq x < 1$  or 0 otherwise. In addition, where the *Factor* equals two (2),  $T$  is defined as  $(1/(2048*4000))$  (approximately 122.07 ns);  $T_g$  is defined as approximately 16.11 mu-sec (= 132T);  $T_u$  is defined as 250 mu-sec = 2048T and  $T_s$  is defined as approximately 266.11 mu-sec (= 2180T).

5

IN THE CLAIMS:

Please amend the claims as indicated below:

1. (Amended) A method of transmitting a signal in an orthogonal frequency division multiplexing (OFDM) system having a plurality of sub-carriers, comprising the steps of:  
10 differentially encoding said signal in the frequency domain using adjacent sub-carriers; and  
transforming said differentially modulated signal to create said OFDM signal.
2. The method of claim 1, wherein said transforming step implements a Fast Fourier Transform.
3. The method of claim 1, wherein said transforming step implements an orthogonal transformation.
- 20 4. The method of claim 1, wherein said transforming step generates said OFDM signal with a plurality of sub-carriers for carrying data.
5. The method of claim 4, wherein at least one unmodulated sub-carrier generated by  
25 said transforming step is allocated as a pilot bin to provide a reference within each OFDM symbol.
6. The method of claim 4, wherein said differential encoding is performed with respect to consecutive sub-carriers in said OFDM system.

7. (Amended) An orthogonal frequency division multiplexing (OFDM) transmitter for transmitting an OFDM signal having a plurality of sub-carriers, comprising:  
a differential encoder for modulating said OFDM signal in the frequency domain using adjacent sub-carriers; and  
5 a transformer for creating said OFDM signal.

8. The transmitter of claim 7, wherein said transformer implements a Fast Fourier Transform.

9. The transmitter of claim 7, wherein said transformer implements an orthogonal transformation.

10. The transmitter of claim 7, wherein said transformer generates said OFDM signal with a plurality of sub-carriers for carrying data.

11. The transmitter of claim 10, wherein at least one unmodulated sub-carrier generated by said transforming step is allocated as a pilot bin to provide a reference within each OFDM symbol.

12. The transmitter of claim 10, wherein said differential encoding is performed with respect to consecutive sub-carriers in said OFDM system.

13. (Amended) A method of receiving a signal in an orthogonal frequency division multiplexing (OFDM) system having a plurality of sub-carriers, comprising the steps of:  
transforming said received signal to recover an OFDM signal in the frequency domain having a plurality of sub-carriers; and  
differentially decoding said OFDM signal in the frequency domain wherein said differential decoding is performed using adjacent sub-carriers.

14. The method of claim 13, wherein said transforming step implements a Fast Fourier Transform.

15. The method of claim 13, wherein said transforming step implements an orthogonal transformation.

16. The method of claim 13, wherein at least one unmodulated sub-carrier recovered by said transforming step is allocated as a pilot bin to provide a reference within each OFDM symbol.

17. The method of claim 13, wherein said differential decoding is performed with respect to consecutive sub-carriers in said OFDM system.

18. (Amended) An orthogonal frequency division multiplexing (OFDM) receiver for receiving an OFDM signal having a plurality of sub-carriers, comprising:  
a transformer for recovering said OFDM signal having a plurality of sub-carriers; and  
a differential decoder for demodulating said OFDM signal in the frequency domain wherein said differential decoding is performed using adjacent sub-carriers.

19. The receiver of claim 18, wherein said transformer implements a Fast Fourier Transform.

20. The receiver of claim 18, wherein said transformer implements an orthogonal transformation.

21. The receiver of claim 18, wherein at least one unmodulated sub-carrier recovered by said transformer is allocated as a pilot bin to provide a reference within each OFDM symbol.

22. The receiver of claim 18, wherein said differential decoder demodulates said OFDM signal with respect to consecutive sub-carriers in said OFDM system.